

Appl. No. 09/297,483
Amendment Dated December 9, 2003
Reply to Office Action of September 16, 2003

Attorney Docket No. 81756.0003
Customer No.: 26021

REMARKS/ARGUMENTS

This application has been carefully reviewed in light of the Office Action dated September 16, 2003. Claims 37-49, 51, 53, 54, 62, 64, 66, 83-97 and 113-128 remain in this application. Claims 37, 62 and 113 are the independent claims. Claims 37, 62 and 113 have been amended. Support for these amendments can be found throughout the specification and drawings of the present application and in FIG. 1. It is believed that no new matter is involved in the amendments or arguments presented herein. Reconsideration and entrance of the amendment in the application are respectfully requested.

Art Based Rejections

Claims 113-127 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 5,701,055 (Nagayama); Claims 37-49, 51, 53, 62, 64, 66, 83-96 and 113-127 were rejected under § 103(a) Nagayama in view of U.S. Patent No. 6,169,163 (Woo) and further in view of U.S. Patent No. 5,766,515 (Jonas), U.S. Patent No. 5,667, 572 (Taniguchi) and U.S. Patent No. 5,972,419 (Roitman). Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the clarifying amendments above and the arguments below.

The Nagayama Reference

The Nagayama reference is directed to a full color display device comprising a matrix of EL elements (*See, Nagayama, abstract; Col. 1, lines 16-18*). According to Nagayama, the insulation ramparts 7 are placed over the anode layer without partitioning the anode layers (*See, Nagayama, Fig. 5C and Figs. 8A-8C, Col. 7, lines 38-56; Col. 8, lines 41 to Col. 9, line 9*).

Appl. No. 09/297,483
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The Woo Reference

The ancillary Woo reference is directed to oligomers and polymers of fluorene compounds and films and coatings prepared from such fluorenes, oligomers and polymers (*See Woo, Col. 1, lines 19-21*).

The Jonas Reference

The ancillary Jonas reference is directed to certain material to be used in production of transparent electrodes such as LCD's (*See, Jonas, abstract; Col. 1, lines 5-15*).

The Taniguchi Reference

The ancillary Taniguchi reference is directed to an ink composition for use in print. According to Taniguchi, the ink composition comprises: a colorant which is either sparingly soluble or insoluble in water; a water-soluble organic solvent capable of dissolving the colorant; a saccharide and/or polyvinyl pyrrolidone; and water (*See, Taniguchi, abstract; Col. 1, lines 6-9*).

The Roitman Reference

The ancillary Roitman reference is directed to display devices, and to displays utilizing polymer-based electroluminescent devices. Roitman teaches depositing multiple colors of electroluminescent materials between barriers using ink-jet printing (*See, Roitman, abstract; Col. 3, lines 1-50*).

Appl. No. 09/297,483
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Attorney Docket No. 81756.0003
Customer No.: 26021

The Claims are Patentable Over the Cited References

The present application is generally directed to methods of manufacturing an organic EL (electroluminescence) element and a composition for use as a hole injecting and transporting layer suitable for ink jet patterning.

As defined by independent claims 37, 62, and 113, a method for manufacturing an organic EL element includes forming a plurality of anode layers. The partitioning member is formed over a substrate and lies at least between adjacent ones of the plurality of anode layers so as to independently partition the adjacent ones of the plurality of anode layers. A plurality of openings are formed over at least a portion of an anode layer, the openings corresponding to the pixel areas. A hole injecting or transporting layer is formed by independently filling each of the openings with a composition for the hole injecting or transporting layer using an ink-jet head. The composition includes (1) a conductive material containing at least a lubricant, polyethylene dioxythiophene, and polystyrene sulfonic acid, and (2) a solvent. The composition filled in the openings is dried to form the hole injecting or transporting layer. Each of the openings is independently filled with a light-emitting layer composition over the hole injecting or transporting layer using an ink-jet head to form the light-emitting layer. The height of the hole injecting or transporting layer and the light-emitting layer is less than that of the partitioning member. A cathode layer is formed over the light-emitting layer.

Independent Claims 37, 62 and 113

The applied art of the record is not seen to disclose or suggest the claimed features of the present invention. In particular, the cited references are not seen to disclose or suggest "the partitioning member lying at least between adjacent ones of

Appl. No. 09/297,483
Amendment Dated December 9, 2003
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Attorney Docket No. 81756.0003
Customer No.: 26021

the plurality of anode layers so as to independently partition the adjacent ones of the plurality of anode layers, whereby a plurality of openings are formed over at least a portion of an anode layer," as required by the claims of the present invention.

Nagayama, cited by the Office Action, is directed to a full color display device comprising a matrix of EL elements (*See, Nagayama, abstract; Col. 1, lines 16-18*). As is clear from the drawings, the insulation rampart 7 disclosed in Nagayama does not partition the anode layers 3 so as to form an opening over the anode layers 3 (*See, Nagayama, Fig. 5C and Figs. 8A-8C; Col. 7, lines 38-56; Col. 8, line 42 to Col. 9, line 9*). In contrast, the present invention requires that "the partitioning member lying at least between adjacent ones of the plurality of anode layers so as to independently partition the adjacent ones of the plurality of anode layers, whereby a plurality of openings are formed over at least a portion of an anode layer".

This results in a more efficient and economical manufacturing of the EL element of the present invention compared to those of the prior art (*See, Application, Page 4, lines 9-22*).

The ancillary Woo, Jonas, Taniguchi and Roitman are not seen to remedy the deficiencies of Nagayama. As such, none of these references, alone or in combination, disclose or suggest the elements of the claimed invention, namely, "forming an anode layer on a substrate, "the partitioning member lying at least between adjacent ones of the plurality of anode layers so as to independently partition the adjacent ones of the plurality of anode layers, whereby a plurality of openings are formed over at least a portion of an anode layer."

Appl. No. 09/297,483
Amendment Dated December 9, 2003
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Attorney Docket No. 81756.0003
Customer No.: 26021

Since the cited reference fails to disclose, teach or suggest the above features recited in the claims of the present invention, these references cannot be said to anticipate nor render obvious the invention which is the subject matter of those claims.

Accordingly, amended independent Claims 37, 62 and 113 are believed to be in condition for allowance and such allowance is respectfully requested.

The remaining claims depend either directly or indirectly from amended independent claims 37, 62 and 113 but recite additional features of the invention which, when taken as a whole, are neither disclosed nor fairly suggested by the applied references and are therefore also believed to be in condition for allowance.

Dependent Claims 114-120

According to page 4 of the Office Action,

There is no evidence that use of particular concentrations, contact angles, viscosities, and surface tensions of the coating solutions cause a structural difference in the formed product.

Applicant respectfully disagrees with this conclusion. Pages 5-9 of the Application discuss in detail the effect of the optimization of the contact angel, viscosity and surface tension, on the physical properties of the formed product. The resulting EL element will have improved light emission characteristics compared to that of the prior art (*See, Application, page 11, lines 15-16*).

Therefore the EL element of the present invention has different characteristics than those disclosed in the prior art. As such the EL element of the present invention necessarily has a different structure than that of those of the prior art. Applicant respectfully submits that because of the demonstrated

Appl. No. 09/297,483
Amendment Dated December 9, 2003
Reply to Office Action of September 16, 2003

Attorney Docket No. 81756.0003
Customer No.: 26021

"unobvious differences between the claimed product and the prior art product," the above rejections of Claims 114-120 must be withdrawn. See MPEP § 2113.

Dependent Claims 121-125

Page 4 of the Office Action states,

Likewise, the identity of the solvent does not appear to materially effect the dried product, and therefore the product appears to be identical regardless of which solvent is used to deposit the layers.

Again, Applicant respectfully disagrees with the above characterization and submits that there are non-obvious differences between the product resulting from use of the claimed solvents compared to those of the prior art. For example, on page 21 of the present application it is stated, "it is apparent that, where these solvents are used, film forming properties are good."

Therefore the present Application discloses that the EL element resulting from use of the claimed solvents has superior qualities compared to the EL elements resulting from the solvents used in the prior art. Applicant respectfully submits that because of the demonstrated "unobvious differences between the claimed product and the prior art product," the above rejections of Claims 121-125 must be withdrawn. See MPEP § 2113.

Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

Appl. No. 09/297,483
Amendment Dated December 9, 2003
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Attorney Docket No. 81756.0003
Customer No.: 26021

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6809 to discuss the steps necessary for placing the application in condition for allowance.

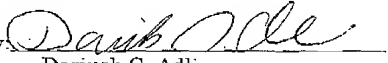
If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1814.

Respectfully submitted,

HOGAN & HARTSON L.L.P.

Date: December 9, 2003

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